

Virginia Electric and Power Company  
North Anna Power Station  
1022 Haley Drive  
Mineral, Virginia 23117

July 23, 2013

Attention: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Serial No.: 13-307  
NAPS: JHL  
Docket No.: 50-339  
License No.: NPF-7

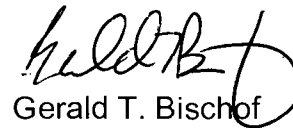
Dear Sirs:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Power Station Unit 2.

Report No. 50-339/2013-002-00

This report has been reviewed by the Facility Safety Review Committee and will be forwarded to the Management Safety Review Committee for its review.

Sincerely,

  
Gerald T. Bischof  
Site Vice President  
North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission  
Region II  
Marquis One Tower  
245 Peachtree Center Ave., NE, Suite 1200  
Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector  
North Anna Power Station

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects.resource@nrc.gov](mailto:infocollects.resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

## 1. FACILITY NAME

North Anna Power Station , Unit 2

## 2. DOCKET NUMBER

05000 339

## 3. PAGE

1 OF 3

## 4. TITLE

Manual Reactor Trip Due to Closure of 2-FW-MOV-250C and Auto-Start of 2-FW-P-1B

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCUMENT NUMBER
5	28	2013	2013	-- 002 --	00	7	23	2013	FACILITY NAME	DOCUMENT NUMBER
										05000
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	
	Specify in Abstract below or in NRC Form 366A			

## 12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Gerald T. Bischof, Site Vice President

TELEPHONE NUMBER (Include Area Code)

(540) 894-2101

## 13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
E	SJ	52	I005	Y					

## 14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

## 15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 28, 2013, at 1507 hours with Unit 2 operating at 98 percent power (Mode 1), a manual reactor trip was initiated due to a main feedwater system transient. The main feedwater system transient resulted from the spurious closure of the "C" Main Feedwater Pump Discharge Motor-Operated Valve, 2-FW-MOV-250C, that subsequently resulted in the tripping of "A" Main Feedwater pump on low suction pressure. The cause of the spurious closure of 2-FW-MOV-250C was a loss of conductivity in the upper cell switch of breaker 2-EP-BRK-25C5 which indicated that one motor on 2-FW-P-1C had tripped. At 1809 hours, a 4 hour report was made to the NRC in accordance with 10CFR50.72(b)(2)(iv)(B) for a Reactor Protection System (RPS) actuation and a 8 hour report in accordance with 10CFR50.72(b)(3)(iv)(A) for a Auxiliary Feedwater system actuation. The event is reportable pursuant to 10CFR50.73(a)(2)(iv)(A) for a condition that resulted in the automatic actuation of the RPS and AFW Systems. The health and safety of the public were not affected by the event.

LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET

1. FACILITY NAME  NORTH ANNA POWER STATION UNIT 2	2. DOCKET  05000 - 339	6. LER NUMBER			3. PAGE  2 OF 3
		YEAR  2013	SEQUENTIAL NUMBER  --002 --	REV NO.  00	

## NARRATIVE

**1.0 DESCRIPTION OF THE EVENT**

On May 28, 2013, at 1507 hours with Unit 2 operating at 98 percent power (Mode 1), a manual reactor trip was initiated due to a main feedwater system transient.

North Anna Unit 2 was ramping up in power and had reached 98 percent power. Prior to the manual reactor trip, Abnormal Procedure 2-AP-31, Loss of Main Feedwater, was entered due to the feedwater system transient. The main feedwater system transient resulted from the spurious closure of the "C" Main Feedwater Pump (EIS System-SJ, Component-P) Discharge Motor-Operated Valve (EIS Component-V), 2-FW-MOV-250C, the auto-start of "B" Main Feedwater Pump, 2-FW-P-1B, and the subsequent opening of the main feedwater recirculation valves that resulted in the tripping of "A" Main Feedwater Pump, 2-FW-P-1A, on low suction pressure. Although the control room crew commenced a 2 percent per minute ramp down per 2-AP-31, steam generator (SG) (EIS System-AB, Component-SG) levels continued to lower. A manual reactor trip was initiated to preclude an automatic reactor trip due to low-low SG levels.

All systems responded as expected during the event. All control rods (EIS System-AA, Component-ROD) inserted into the core at the time of the trip and decay heat was removed via the condenser steam dumps (EIS System-COND). The auxiliary feedwater (AFW) pumps (EIS System-BA, Component-P) received an automatic start signal as designed following the reactor trip and provided makeup flow to the steam generators (SG). The SG levels were subsequently restored to normal operating level and the AFW pumps were secured and returned to automatic.

**2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS**

No significant safety consequences resulted from this event since the Reactor Protection System (RPS) and the Engineered Safety Feature (ESF) System equipment responded as designed. As such, the event posed no significant safety implications and the health and safety of the public were not affected by the event.

At 1809 hours, a 4 hour report was made to the NRC in accordance with 10CFR50.72(b)(2)(iv)(B) for a Reactor Protection System (RPS) actuation and a 8 hour report in accordance with 10CFR50.72(b)(3)(iv)(A) for a Auxiliary Feedwater System actuation. The event is reportable pursuant to 10CFR50.73(a)(2)(iv)(A) for a condition that resulted in the automatic actuation of the RPS and AFW Systems.

**3.0 CAUSE**

The direct cause of the spurious closure of 2-FW-MOV-250C and the auto-start of 2-FW-P-1B was a loss of conductivity (high resistance) across contacts 25 and 26 in the upper cell switch (EIS Component-33) "AF" of breaker 2-EP-BKR-25C5 (EIS Component-BKR).

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## NARRATIVE

The root cause determined that adequate maintenance strategies were not implemented for mechanism operated cell (MOC) and truck operated cell (TOC) switches. This was due to the program owner's and supporting organization's failure to recognize and recommend industry known and documented strategies, and the satisfactory historical performance of these components at North Anna.

**4.0 IMMEDIATE CORRECTIVE ACTION(S)**

The Control Room crew responded to the reactor trip in accordance with emergency procedure 2-E-0, Reactor Trip or Safety Injection. The post trip response progressed as expected and the Control Room crew transitioned to 2-ES-0.1, Reactor Trip Response. All equipment responded as designed.

**5.0 ADDITIONAL CORRECTIVE ACTIONS**

The linkage to the MOC switch for breaker 2-EP-BKR-25C2 was lubricated and manually manipulated to verify the linkage was free to move. Breaker 2-EP-BKR-25C5 was replaced and the upper cell switch "AF" on breaker 2-EP-BKR-25C5 was replaced.

**6.0 ACTIONS TO PREVENT RECURRENCE**

Corrective actions are being tracked under root cause evaluation RCE001101. Corrective actions include development of: 1) maintenance strategies for MOC and TOC cell switches in 4160 volt breaker cubicles, 2) preventative maintenance procedures based on the maintenance strategies, and 3) maintenance procedures for MOC and TOC switches that clean and inspect cell switches, verify the linkage is not binding, and verify the linkage is properly adjusted so the contacts are properly engaged.

**7.0 SIMILAR EVENTS**

LER 50-339/1999-004-00 dated December 23, 1999 documented a manual reactor trip due to loss of main feedwater suction pressure during a secondary system transient and auxiliary feedwater system actuation.

**8.0 ADDITIONAL INFORMATION**

Unit 1 was operating in Mode 1, 100 percent power on May 28, 2013 and was not affected by this event.